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(71) Applicants:
• **UNILEVER N.V.**
3000 DK Rotterdam (NL)
Designated Contracting States:
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• **UNILEVER PLC**
London EC4P 4BQ (GB)
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(72) Inventors:
• **van Amerongen, Marnix P.**
3133 AT Vlaardingen (NL)
• **Lievense, Lourus Cornelis**
13270 - 000 Valinhos/SP (BR)

(74) Representative:
Boerma, Caroline et al
Unilever N.V.,
Patent Division,
P.O. Box 137
3130 AC Vlaardingen (NL)

(54) Stanol comprising compositions

(57) The invention regards a process for the preparation of a mixture of stanol and stanol fatty acid esters by esterification of phytosterols with a source for fatty acid moieties, in such a way that the degree of esterification of the phytosterols is in the range of 40-85%, and subsequent hardening of the so obtained sterol/sterol fatty acid mixture, the process can be carried out without the use of any solvent, and wherein preferably the fatty acid groups of the stanol fatty acid esters are substantially saturated fatty acid esters. Also claimed are food products comprising mixtures of stanol and stanol fatty acid esters, in particular fat based food products such as yellow fat spreads.

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were mixed with 23 parts of normal refined sunflower oil and with 5 parts of a refined interesterified mixture of 50 parts fully hardened palm oil and 50 parts fully hardened palm kernel oil. To this fat blend small amounts of soybean lecithin, monoglyceride and beta-carotene solution were added.

[0048] To 44 parts water, gelatine and small amounts of whey protein powder, flavours, preservative and citric acid were added to obtain a pH of 4.7.

[0049] 50 parts of the fat phase composition (containing 40% of fat) and 48 parts of the aqueous phase composition were mixed and kept at 60 degree C. The mixture was then passed through a Votator line with 2 scraped surface heat exchangers (A-units) and 2 stirred crystallizers (C-unit), in ACAC-sequence operating at 500, 1000, 600 and 100 rpm respectively. The product leaving the last C-unit had a temperature of 10 degree C. It was filled into tubs and stored at 5 degree C. A good and stable, high PUFA, low fat-continuous spread enriched with 10% stanol equivalents (mainly present as C18:0 stanol esters) was obtained.

Example 3b

Preparation of a spread 40% (Opt. ratio Ex.1b)

[0050] Refined sunflower oil was enriched with free and esterified stanols as obtained from Example 1b (to a total stanol equivalent concentration of 45%). Of this stanol and stanol-ester concentrate, 22 parts were mixed with 23 parts of normal refined sunflower oil and with 5 parts of a refined interesterified mixture of 50 parts fully hardened palm oil and 50 parts fully hardened palm kernel oil. To this fat blend small amounts of soybean lecithin, monoglyceride and beta-carotene solution were added.

[0051] To 44 parts water, gelatine and small amounts of whey protein powder, flavours, preservative and citric acid were added to obtain a pH of 4.7.

[0052] 50 parts of the fat phase composition (containing 40% of fat) and 48 parts of the aqueous phase composition were mixed and kept at 60 degree C. The mixture was then passed through a Votator line with 2 scraped surface heat exchangers (A-units) and 2 stirred crystallizers (C-unit), in ACAC-sequence operating at 500, 1000, 600 and 100 rpm respectively. The product leaving the last C-unit had a temperature of 10 degree C. It was filled into tubs and stored at 5 degree C. A good and stable, high PUFA, low fat-continuous spread enriched with 10% stanol equivalents (present as free and as C18:0 stanol esters) was obtained.

Example 4a

Preparation of a dressing (Stanol esters Ex.1a)

[0053] 49 parts of water is mixed with 11 parts of various flavour components, preservatives, thickeners and

emulsifiers. The mixture is thoroughly mixed in a stainless steel stirred vessel. To this aqueous mixture 20 parts of sunflower oil (65% PUFA as linoleic acid) enriched with 40% stanol equivalents present as stanol esters as obtained from Example 1a is added. To above oil in water mixture, 20 parts of normal refined sunflower oil is added, thoroughly mixed for an additional 15 min, to obtain a pre-emulsion. The pre-emulsion is brought into a colloid mill (Prestomill PM30) and processed at a split-size between level 15 and 20 and a throughput between level 4 and 6. A good and stable water continuous dressing enriched with 8% stanol equivalents (mainly present as C18:0 stanol esters) is obtained.

Claims

1. Process for the preparation of a mixture of stanol and stanol esters by esterification of phytosterols with a source of fatty acid moieties in such a way that the degree of esterification of the phytosterols is in the range of 40-85%, and subsequent hardening of the so obtained sterol/sterol fatty acid ester mixture.
2. Process according to claim 1, wherein the degree of esterification of the phytosterols is in the range of 55-80%, and preferably in the range of 60-70%.
3. Process according to any one of claims 1-2, wherein all steps of the process are carried out in such a manner that no solvents are needed.
4. Process according to any one of the preceding claims, wherein the fatty acid groups of the stanol fatty acid esters are substantially saturated fatty acid esters.
5. Process according to any one of the preceding claims, wherein the phytosterols are esterified with a source for fatty acid moieties comprising more than 70% of C18 polyunsaturated, monounsaturated and/or saturated fatty acid groups.
6. Composition containing stanols wherein 15-60% stanols and 40-85% stanol fatty acid esters are present, and wherein the fatty acid groups of the stanol fatty acid esters are substantially saturated fatty acid groups.
7. Food product comprising at least 1 wt% stanol equivalents present as a mixture of free stanols and fatty acid esterified stanols in a composition according to claim 6.
8. Food product comprising at least 1 wt% stanol equivalents present as a mixture of free stanols and fatty acid esterified stanols in a composition prepared according to the process of any one of claims

1-5.

9. Food product according to one of claim 7-8,
wherein at least 5 wt% of a mixture of 15-50% sta-
nol and 50-85% stanol fatty acid esters is present. 5
10. Food product according to any one of claims 7-8,
wherein at least 3 wt%, and preferably at least 5
wt% stanol equivalents are present. 10
11. Food product according to any one of claims 6-9,
wherein the food product is a fat based food prod-
uct.
12. Food product according to claim 10, wherein the fat 15
based food product is a yellow fat spread compris-
ing 0-80% fat.
13. Food product according to any one of claims 11-12
wherein the fat used in the product is a fat compris- 20
ing at least 30 wt%, and preferably at least 45 wt%
of PUFA rich triglycerides, calculated on the total
weight of the fat present in the product.

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EUROPEAN SEARCH REPORT

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EP 98 20 2589

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
P,X	WO 98 01126 A (UNILEVER NV ;UNILEVER PLC (GB); AMERONGEN MARNIX P VAN (NL); LIEVE) 15 January 1998 * page 5, line 23 - line 25 * * page 10, line 1-4 * ---	1-13	C11C3/00 A23D9/013 A23D7/00 A23L1/24 C07J9/00
A	PATENT ABSTRACTS OF JAPAN vol. 011, no. 251 (C-440), 14 August 1987 & JP 62 055040 A (NISSHIN OIL MILLS LTD:THE), 10 March 1987 * abstract * ---	1,7,8,11	
A	GB 1 405 346 A (HARBURGER OELWERKE BRINCKMAN M) 10 September 1975 * page 2, line 42 - line 44 * * examples 1,2 * * claims 1-11 * ---	1,7,8,11	
D,A	WO 92 19640 A (RAISION MARGARIINI OY) 12 November 1992 * claims 1-9 * ---	1,7-13	
P,A	WO 98 19556 A (WESTER INGMAR ;RAISIO YHTYMAE OYJ (FI)) 14 May 1998 * claims 1-27 * ---	1,7-13	
P,A	WO 98 06405 A (RAISION TEHTAAT OY AB ;PALMU TAPIO (FI); WESTER INGMAR (FI); GYLLI) 19 February 1998 * claims 1-10 * -----	1,7,11	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 10 December 1998	Examiner Dekeirel, M
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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